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Neu eingegangene Arbeiten

R. J. Champeau, Laboratoire Aime Cotton, Orsay; **E. Handrich,** Litef, Freiburg (Breisgau); **H. Walther,** I. Physikalisches Institut der Universität Köln:

The Hyperfine Structure of the $y\,^8P$-Multiplet of $4f^7\,(^8S)\,6s\,6p$ in EuI

The hyperfine splitting constants of the $4f^7\,6s\,6p\,y\,^8P_{7/2}$ level of EuI were determined using the level crossing method. These values and those for the hyperfine splittings of the other $4f^7\,6s\,6p$ levels are compared to theoretical values calculated with eigenfunctions of Smith and Collins. For the quadrupole coupling constants a better agreement between theory and experiment is obtained if different $\langle r^{-3}\rangle_p$-parameters are assumed for $4f^7(^8S)\,6s\,6p(^3P)$ and for $4f^7(^8S)\,6s\,6p(^1P)$.

R. Pitthan, Institut für Technische Kernphysik der Technischen Hochschule Darmstadt:

Unelastische Streuung von 50 und 65 MeV-Elektronen an Ce, La und Pr (Inelastic Scattering of 50 and 65 MeV-Electrons Ce, La and Pr)

The reduced matrix elements for the ground state transitions to the first 2^+, 3^- and 4^+ states in ^{140}Ce and ^{142}Ce were determined by DWBA analysis. In the giant resonance region of Ce, La and Pr three broad resonances at excitation energies of 9, 12 and 15 MeV have been found. They are interpreted as $M1$, $E2$ and $E1$ giant resonances. For Ce the total widths are (2.2 ± 0.4) MeV ($M1$) and (2.8 ± 0.3) MeV ($E2$) and the groundstate radiative widths (90 ± 45) eV ($M1$), (100 ± 30) eV ($E2$) and $(5 \pm 1) \cdot 10^4$ eV ($E1$).

Chr. Bargholtz, L. Eriksson, L. Gidefeldt, L. Holmberg, and V. Stefansson, Institute of Physics, University of Stockholm:

Levels and Transitions in ^{136}Ba

Excited states of ^{136}Ba are studied in the beta decay of ^{136}Cs. The gamma spectrum is measured with high-resolution and coincidence techniques. Several new transitions are suggested to be connected with two recently reported levels. Gamma-gamma directional correlations are performed in an attempt to determine the characteristics of these levels, and in order to determine mixing ratios. The lifetime of the 2207.5 keV state is remeasured, and the lifetime of the 2140.5 keV state is measured for the first time.

G.-H. Göritz, K.-H. Paßler, G. Sauer, and P.-G. Zint, Institut für Theoretische Physik der Justus Liebig-Universität Gießen:

Elastic Scattering of Electrons by Deuterons in the Framework of the Source Theory by J. Schwinger

Cross sections of the elastic scattering of electrons from the deuterons are calculated with the concept of primitive interaction, disregarding the form factors of the deuteron. Formulas are derived for the various possibilities of the electron and deuteron polarization. Numerical results are given for 175 MeV scattering in the rest frame.

A. v. d. Decken, M. Goldschmidt, A. Heusler, H. V. Klapdor, W. Reiter, D. Rieck, W. Saathoff, C. A. Wiedner, Max-Planck-Institut für Kernphysik, Heidelberg,
D. Dehnhard, School of Physics and Astronomy University of Minnesota, Minneapolis:
Study of the Ground State Doublet in ^{57}Fe

The ^{56}Fe$(d, p)^{57}$Fe reaction has been studied at an incident energy of about 10 MeV. The ground state doublet of ^{57}Fe has been resolved using the Heidelberg Q3D magnetic spectrograph and the Minnesota split-pole spectrograph. The ratio of the spectroscopic strengths $(2J+1)S$ for the transitions to the first excited state at 14.4 keV excitation energy ($J^\pi = 3/2^-$) and the ground state ($J^\pi = 1/2^-$) has been determined to be 5.80 ± 0.5.

This number is of special interest with respect to a possible deformation of the nucleus ^{57}Fe and in connection with the corresponding analogue resonances in ^{57}Co.

M. Feil, W. von Oertzen, H. G. Bohlen, A. Gamp, and R. L. Walter, Max-Planck-Institut für Kernphysik, Heidelberg,
B. Kohlmeyer, Physikalisches Institut der Universität, Marburg/Lahn:
Structures in the Excitation Functions for Compound Reactions in the ^{12}C + ^{14}C System

Excitation functions for the elastic scattering of ^{12}C on ^{14}C and the reactions ^{14}C$(^{12}$C, $\alpha)^{22}$Ne, ^{14}C$(^{12}$C, $t)^{23}$Na and ^{14}C$(^{12}$C, $d)^{24}$Na have been measured in the vicinity of the Coulombbarrier. Strong fluctuations of the differential cross sections as a function of incident energy are observed in the α-particle, triton and deuteron channels. The total yield in the three different channels shows correlated structures at energies $E_{c.m.} = 6.8$, 7.2 and 8.3 MeV. This phenomenon is similar to the structures observed in the ^{12}C + ^{12}C reactions and indicates the possible presence of resonances in the entrance channel.

A. Faessler, Institut für Kernphysik der Kernforschungsanlage Jülich GmbH, and Physics Department of the University of Bonn.
F. Grümmer, and A. Plastino, Institut für Kernphysik der Kernforschungsanlage Jülich GmbH:
A Particle Number Projection Study with the Generator Coordinate Method

The generator coordinate method (GCM) is used in order to describe pairing vibrations. The generating wave functions are particle-number-projected BCS-wave functions. With the conventional pairing Hamiltonian the method is tested in some simple models and applied also to the even Nickel isotopes. The results obtained can be regarded as encouraging ones.

S. Kusuno, Institut für Kernphysik der Kernforschungsanlage Jülich:
Number-Conserving Treatment of the BCS-Tamm-Dancoff Approximation for Deformed Rare-Earth Nuclei

The formulation for the exact number-conserving treatment of the BCS-Tamm-Dancoff approximation (NTDA) in deformed even nuclei is given. It is applied to the $K^\pi = 0^-$ octupole vibrations of rare-earth nuclei and is also compared with the ordinary TDA or RPA method based on the Bogoliubov transformation which has the defect of mixing of the particle number in the wave functions. The excitation energies and $B(E3)$ calculated by NTDA method show rather stronger dependence on the Nilsson orbits than those calculated by the usual TDA or RPA methods, especially at $N = 94$ nuclei.

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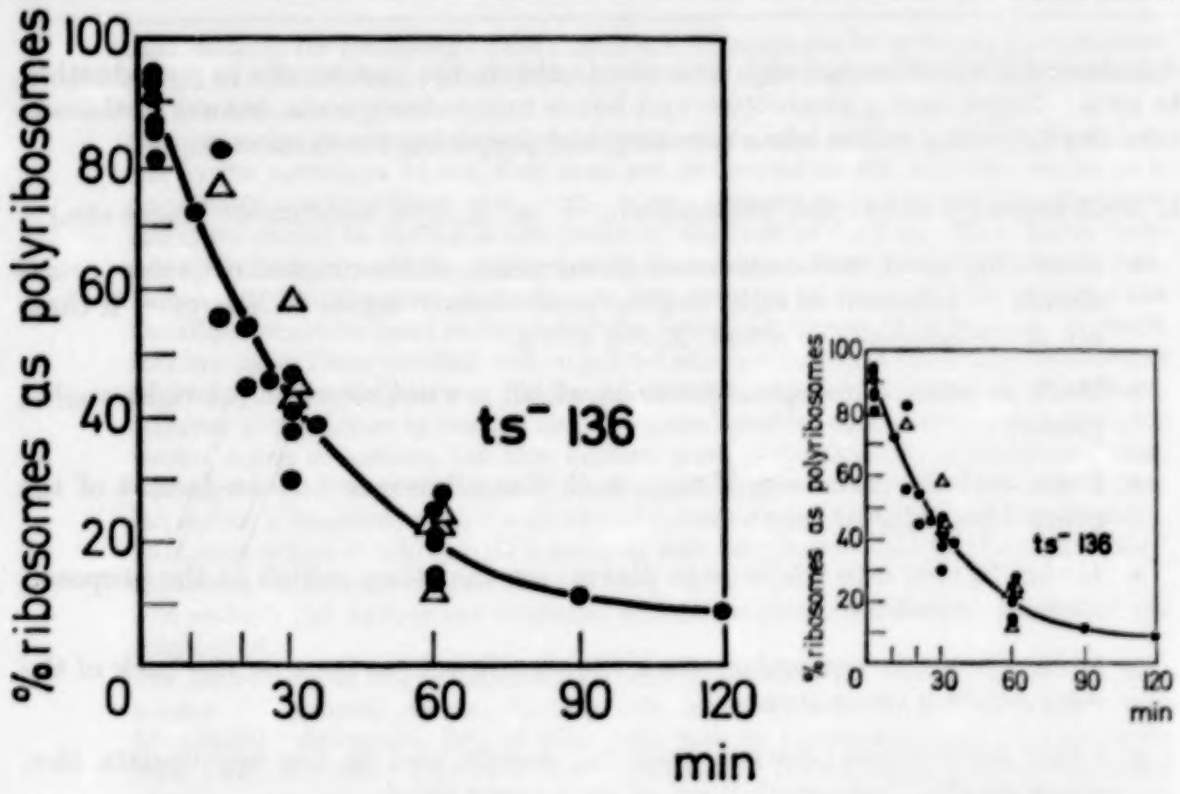

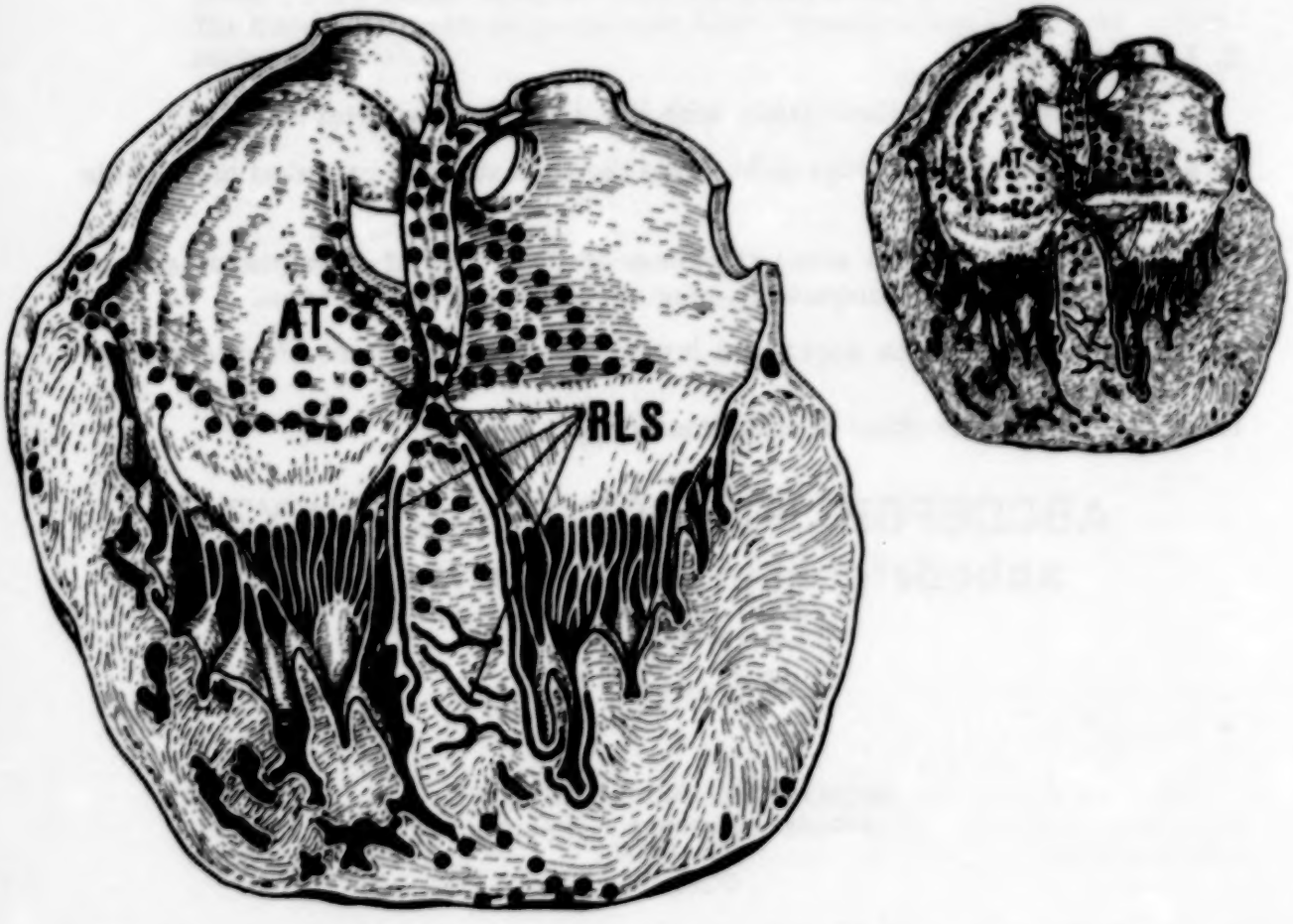

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